CLAIMS

1. A method for disassembling a refrigerator comprising the processes of:

collecting a refrigerant gas and removing a compressor;

cutting/processing and separating a heat–insulating housing including a heat insulator into a plurality of pieces; and

compressing/processing the pieces by compression rollers opposing each other so as to collect a gas contained in the heat insulator.

2. The method for disassembling a refrigerator according to claim 1, wherein the heat–insulating housing is cut/processed to be at least one of substantially flat, substantially U–shaped and substantially L–shaped pieces.

3. The method for disassembling a refrigerator according to claim 1, wherein the process of cutting/processing and separating the heat–insulating housing comprises a process of cutting/processing the heat–insulating housing so as to remove a door and a process of slicing the heat–insulating housing into cross sections, each of predetermined thickness.

4. The method for disassembling a refrigerator according to claim 1, wherein the process of cutting/processing and separating the heat–insulating housing comprises a process of cutting/processing the heat–insulating housing so as to remove a door and a process of cutting/processing and separating the heat–insulating housing into a plurality of substantially flat pieces and at least one substantially L–shaped piece.

5. The method for disassembling a refrigerator according to claim 1, wherein the process of cutting/processing and separating the heat–insulating housing comprises a process of cutting/processing and separating the heat–insulating housing into pieces of a door, a top plate, a bottom plate, a side plate, a back plate and a partition plate.

6. The method for disassembling a refrigerator according to claim 1, wherein the process of cutting/processing and separating the heat–insulating housing uses a cutting device comprising

a rotor with a principal plane,

a spindle provided in a normal direction to the principal plane, and

at least one impacting body mounted on the spindle rotatably,

wherein the impacting body is mounted so that a predetermined fitting gap is provided between the impacting body and the spindle and a part of a periphery of the impacting body can be positioned beyond a periphery of the rotor, and

the heat–insulating housing is cut/processed by rotating the rotor at a high speed to allow the impacting body to impact on the heat–insulating housing at least at a critical impact velocity.

7. The method for disassembling a refrigerator according to claim 6, wherein the impacting body is allowed to impact on the heat–insulating housing at a speed of at least about 139 m/second (about 500 km/hour).

8. The method for disassembling a refrigerator according to claim 6, wherein the impacting body is allowed to impact on the heat–insulating housing at a speed of at least about 340 m/second (about 1224 km/hour).

9. The method for disassembling a refrigerator according to claim 6, wherein the impacting body is allowed to impact on the heat–insulating housing at a speed at least twice as high as the critical impact velocity of the heat–insulating housing.

10. The method for disassembling a refrigerator according to claim 6, wherein the impacting body cuts the heat–insulating housing by impacting on the heat–insulating housing to smash a surface thereof.

11. The method for disassembling a refrigerator according to claim 1, wherein the process of cutting/processing and separating the heat–insulating housing uses a cutting device comprising at least a first rotating unit and a second rotating unit, each of these rotating units comprising

a rotor with a principal plane,

a spindle provided in a normal direction to the principal plane, and

at least one impacting body mounted on the spindle rotatably,

wherein the impacting body is mounted so that a predetermined fitting gap is provided between the impacting body and the spindle and a part of a periphery of the impacting body can be positioned beyond a periphery of

the rotor, and

the impacting body of the first rotating unit and the impacting body of the second rotating unit are allowed to impact on the heat–insulating housing sequentially while rotating the rotating units in a plane parallel with the principal plane of the rotor at a high speed and holding the first and second rotating units so that a circular path of a tip of the impacting body of the first rotating unit and a circular path of a tip of the impacting body of the second rotating unit during the rotation substantially are on the same plane, a cutting depth by the impacting body of the second rotating unit is made larger than that by the impacting body of the first rotating unit, and the impacting body of at least one of the rotating units is allowed to impact on the heat–insulating housing at least at a critical impact velocity, whereby the heat–insulating housing is cut/processed in a direction substantially parallel with the principal plane of the rotor.

12. The method for disassembling a refrigerator according to claim 11, wherein the impacting body of the first rotating unit, which impacts on the heat–insulating housing first, is allowed to impact on the heat–insulating housing at least at the critical impact velocity.

13. The method for disassembling a refrigerator according to claim 11, wherein the rotating units are provided on a common base.

14. The method for disassembling a refrigerator according to claim 11, wherein the impacting body has a different shape in each of the rotating units.

15. The method for disassembling a refrigerator according to claim 11, wherein the impacting body of at least one of the rotating units is allowed to impact on the heat–insulating housing at a speed of at least about 139 m/second (about 500 km/hour).

16. The method for disassembling a refrigerator according to claim 11, wherein the impacting body of at least one of the rotating units is allowed to impact on the heat–insulating housing at a speed of at least about 340 m/second (about 1224 km/hour).

17. The method for disassembling a refrigerator according to claim 11, wherein the impacting body of at least one of the rotating units is allowed to impact on the heat–insulating housing at a speed at least twice as high as the critical impact velocity of the heat–insulating housing.

18. The method for disassembling a refrigerator according to claim 11, wherein the impacting body that impacts on the heat–insulating housing at least at the critical impact velocity cuts the heat–insulating housing by impacting on the heat–insulating housing to smash a surface thereof.

19. The method for disassembling a refrigerator according to claim 11, wherein, when the heat–insulating housing is formed by layering at least a first layer and a second layer that have different critical impact velocities, the first layer is cut mainly by the impacting body of the first rotating unit, the second layer is cut mainly by the impacting body of the second rotating unit, and an impact velocity of the impacting body of the first rotating unit against the heat–insulating housing is made different from that of the impacting body of the second rotating unit against the heat–insulating housing.

20. The method for disassembling a refrigerator according to claim 11, wherein, when the heat–insulating housing is formed by layering at least a first layer and a second layer that has a critical impact velocity smaller than the first layer, the first layer is cut mainly by the impacting body of the first rotating unit, and the second layer is cut mainly by the impacting body of the second rotating unit.

21. The method for disassembling a refrigerator according to claim 20, wherein the cutting depth by the impacting body of the first rotating unit is equal to or larger than a thickness of the first layer.

22. The method for disassembling a refrigerator according to claim 20, wherein the impacting body of the first rotating unit is allowed to impact on the first layer at least at the critical impact velocity of the first layer.

23. The method for disassembling a refrigerator according to claim 20, wherein the impacting body of the first rotating unit is allowed to impact on the first layer at a speed at least twice as high as the critical impact velocity

of the first layer.

24. The method for disassembling a refrigerator according to claim 20, wherein the impacting body of the first rotating unit is allowed to impact on the first layer at a speed of at least about 139 m/second (about 500 km/hour).

25. The method for disassembling a refrigerator according to claim 20, wherein the impacting body of the first rotating unit is allowed to impact on the first layer at a speed of at least about 340 m/second (about 1224 km/hour).

26. The method for disassembling a refrigerator according to claim 20, wherein the impacting body of the second rotating unit is allowed to impact on the second layer at a speed not greater than the critical impact velocity of the first layer.

27. The method for disassembling a refrigerator according to claim 11, wherein the circular path of the tip of the impacting body of the first rotating unit has a smaller radius than the circular path of the tip of the impacting body of the second rotating unit.

28. The method for disassembling a refrigerator according to claim 6 or 11, wherein an outer shape of the impacting body is any one of a polygon with a plurality of corners, a shape with projections at substantially equal angles on its periphery, a disc shape, a substantially–bell shape, a substantially–"9" shape and a substantially–bow shape.

29. The method for disassembling a refrigerator according to claim 6 or 11, wherein the fitting gap between the spindle and the impacting body is at least 2 mm.

30. The method for disassembling a refrigerator according to claim 6 or 11, wherein the fitting gap between the spindle and the impacting body is about 5 to 10 mm.

31. A compressing device comprising:

at least a pair of compression rollers opposing each other for compressing/processing an object to be compressed;

a gas diffusion preventing device for preventing a diffusion of a gas leaking from the object to be compressed during compressing; and

a gas collecting device for collecting the gas.

32. The compressing device according to claim 31, further comprising a carrier device for carrying the object to be compressed.

33. The compressing device according to claim 32, wherein the carrier device is a belt conveyor.

34. The compressing device according to claim 31, wherein the object to be compressed is a piece obtained by cutting a heat–insulating housing of a refrigerator.

35. A device for disassembling a refrigerator comprising:

a cutting device for cutting/processing a heat–insulating housing of a refrigerator including a heat insulator into a plurality of pieces; and

a compressing device for compressing/processing the pieces with compression rollers opposing each other so as to collect a gas contained in the heat insulator;

wherein the cutting device comprises

a rotor with a principal plane,

a spindle provided in a normal direction to the principal plane, and

at least one impacting body mounted on the spindle rotatably,

wherein the impacting body is mounted so that a predetermined fitting gap is provided between the impacting body and the spindle and a part of a periphery of the impacting body can be positioned beyond a periphery of the rotor, and

the rotor is rotated at a high speed to allow the impacting body to impact on the heat–insulating housing at least at a critical impact velocity.

36. A device for disassembling a refrigerator comprising:

a cutting device for cutting/processing a heat–insulating housing of a refrigerator including a heat insulator into a plurality of pieces; and

a compressing device for compressing/processing the pieces with

compression rollers opposing each other so as to collect a gas contained in the heat insulator;

wherein the cutting device comprises at least a first rotating unit and a second rotating unit, each of these rotating units comprising

a rotor with a principal plane,

a spindle provided in a normal direction to the principal plane, and

at least one impacting body mounted on the spindle rotatably,

wherein the impacting body is mounted so that a predetermined fitting gap is provided between the impacting body and the spindle and a part of a periphery of the impacting body can be positioned beyond a periphery of the rotor,

the impacting body of the first rotating unit and the impacting body of the second rotating unit impact on the heat–insulating housing sequentially while the rotating units are rotated in a plane parallel with the principal plane of the rotor at a high speed and the first and second rotating units are held so that a circular path of a tip of the impacting body of the first rotating unit and a circular path of a tip of the impacting body of the second rotating unit during the rotation substantially are on the same plane,

a cutting depth by the impacting body of the second rotating unit is larger than that by the impacting body of the first rotating unit, and

the impacting body of at least one of the rotating units impacts on the heat–insulating housing at least at a critical impact velocity,

whereby the heat–insulating housing is cut in a direction substantially parallel with the principal plane of the rotor.

37. The device for disassembling a refrigerator according to claim 35 or 36, wherein the compressing device further comprises a gas diffusion preventing device for preventing a diffusion of a gas leaking from the pieces during compressing/processing and a gas collecting device for collecting the gas.

38. The device for disassembling a refrigerator according to claim 35 or 36, wherein the cutting device is mounted to an arm of a robot with a multi–axis control function.

39. The device for disassembling a refrigerator according to claim 35 or

36, wherein at least one of an intrinsic oscillatory waveform and an intrinsic oscillation frequency that are caused by an impact of the impacting body against the heat–insulating housing, a load on a driving motor for rotating the rotor and an outer shape of the heat–insulating housing is detected, and at least one of a rotational speed of the rotor, a cutting depth and a relative speed and a relative moving direction between the rotor and the heat–insulating housing is changed.

40. The device for disassembling a refrigerator according to claim 36, wherein at least one of an intrinsic oscillatory waveform and an intrinsic oscillation frequency that are caused by an impact of the impacting body against the heat–insulating housing and a load on a driving motor for rotating the rotor is detected for each of the rotating units, and at least one of a rotational speed of the rotor, a cutting depth and a relative speed and a relative moving direction between the rotor and the heat–insulating housing is changed for each of the rotating units.

41. The device for disassembling a refrigerator according to claim 35 or 36, further comprising a carrier device for carrying each of the pieces that have been cut/processed and separated in the cutting device to the compressing device.